

Evolution in 3 dimensions – Biodiversity of midwater and deep-sea zooplankton communities

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The biodiversity of deep-sea zooplankton has received growing scientific interest in the last decade, especially in the framework of international initiatives such as Census of Marine Zooplankton. While a growing number of deep-sea zooplankton has been identified and genetically characterised, little information is available on the mechanisms minimizing inter-specific competition and thus allowing closely related species to co-occur in the deep-sea pelagic realm. Moreover, speciation and radiation processes in the almost homogeneous environment of the deep sea are far from understood. Focussing on ecologically important and species-rich copepod families and based on a combination of field studies, molecular analyses and trophic biomarker assessments in different parts of the World Ocean, the present study strives to characterize ecological niches of co-occurring species, with regard to vertical distribution, dietary composition and reproductive behaviour. Vertical partitioning of the water column between closely related species and the separation of trophic niches among co-occurring species interact in avoiding inter-specific competition and sustaining a high biodiversity in the three-dimensional environment of the pelagic deep sea. Finally, the presentation provides a glimpse on novel proteomics-based methods for rapid and cheap species identification of mesopelagic zooplankton.